

What is claimed is:

1. A computer-implemented method for designing an electrical substation, comprising:

identifying functional requirements for said electrical substation;

5 selecting components for said electrical substation from a store of said components as a function of said functional requirements; and

generating at least one substation design, said substation design meeting said identified functional requirements for said electrical substation.

10 2. The computer-implemented method of claim 1, further comprising: receiving data concerning weighted preferences regarding aspects of said substation; and

ranking said substation design as a function of said preferences.

15 3. The computer-implemented method of claim 1, further comprising outputting at least one of said substation designs.

4. The computer-implemented method of claim 1, wherein an electrical substation comprises one of a power substation and a switching substation.

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5. The computer-implemented method of claim 1, wherein identifying functional requirements for said electrical substation further comprises:

presenting a series of questions; and

accepting responses to said questions;

wherein subsequent questions are presented as a function of responses to previous questions.

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6. The computer-implemented method of claim 1, wherein said generating at least one substation design comprises using a knowledge-based system that includes a user modifiable artificial intelligence based representation of a decision tree defined by hierarchical nodes.

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7. The computer-implemented method of claim 1, wherein selecting components for said electrical substation design further comprises creating a database including a stored database representation of attributes of substation components, said stored database representation being consistent with the multi-level nodal hierarchy of the knowledge-based system.

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8. The computer-implemented method of claim 7, wherein said database can be dynamically updated with additional designs and substation components and component attributes.

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9. A computer-implemented system for designing an electrical substation comprising:

an input device for collecting functional requirements for an electrical substation;
a processing unit containing computer-executable instructions for accepting said functional requirements for an electrical substation and for generating at least one design for an electrical substation as a function of said functional requirements.

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10. The computer-implemented system of claim 9, further comprising an output device, for outputting said at least one design for an electrical substation as a function of said functional requirements.

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10 11. The computer-implemented system of claim 9, wherein said computer-executable instructions for generating at least one design for an electrical substation as a function of said functional requirements further comprises computer-executable instructions for accepting weighted preferences regarding aspects of said substation and ranking at least one said design for said electrical substation as a function of said preferences.

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12. The computer-implemented system of claim 9, wherein said input device for collecting functional requirements for an electrical substation further comprises an input device for collecting information from which weighted preferences can be derived.

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13. The computer-implemented system of claim 9, wherein said input device for collecting functional requirements presents questions in an interactive, hierarchical

manner, wherein subsequent questions are presented as a function of responses to previous questions.

14. The computer-implemented system of claim 13, wherein said system of
5 presenting questions is implemented by means of a decision tree.

15. The computer-implemented system of claim 9, wherein said processing
unit for generating at least one substation design as a function of said functional
requirements is an expert system.

16. The computer-implemented system of claim 9, wherein said processing
unit for generating at least one substation design further comprises executable
instructions for ranking said at least one substation design as a function of weighted
preferences.

17. The computer-implemented system of claim 10, wherein said output
device further comprises a device for outputting a list of system components making up a
substation design and their attributes.

18. The computer-implemented system of claim 10, wherein said output
device further comprises a device for outputting a blueprint of a substation design.

19. A computer-readable medium containing computer-executable instructions for designing an electrical substation comprising:

identifying functional requirements for said electrical substation;

selecting components for said electrical substation from a store of said

5 components as a function of said functional requirements; and

generating at least one substation design, said substation design meeting said

identified functional requirements for said electrical substation.

20. The computer-readable medium of claim 19, containing further computer-executable instructions for designing an electrical substation for:

identifying preferences; and

ranking said at least one substation design as a function of said preferences.

21. The computer-readable medium of claim 19, wherein said computer-executable instructions for generating at least one design further comprise a knowledge-based system including a user-modifiable artificial intelligence.

22. The computer-readable medium of claim 19, wherein said computer-executable instructions further comprise instructions for evaluating said design solution,

20 using an input of preferences.

23. The computer-readable medium of claim 19, wherein the computer-executable instructions define a multi-level, nodal decision tree defined by hierarchical nodes.

5 24. The computer-readable medium of claim 19, wherein said instructions include a database of substation components consistent with said knowledge based system.

10 25. The computer-readable medium of claim 19, containing further computer-executable instructions for developing a database of substation components.